
Procedures and Protocols for Bad Weather and Rail/Road Conditions for WIPP Shipments

Draft

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Table of Contents

1.	Introduction	3
2.	Track Conditions Assessment	3
3.	Evaluation Criteria	3
4.	Dispatch Procedures	5
5.	Adverse Conditions En Route	5

Appendixes

Appendix A:	National Weather Service Terms Used in Advisories	7
Appendix B:	State Road and Travel Information Service	10
Appendix C:	U. S. Department of Energy Central Monitoring Room Contact	11
Appendix D:	State Contacts During A Shipment Delay	12

1. Introduction

The shipment by rail of transuranic waste should be restricted when weather conditions are especially hazardous and pose a threat to the safety of the shipment and/or jeopardize the ability of emergency responders to respond to an incident. Inclement weather conditions can create hazardous travel conditions. While trains may move under such circumstances, track conditions such as icing, heat buckling, etc., can create hazardous travel conditions for trains. Concurrently, inclement weather creates bad road conditions that produce additional problems and safety concerns for Emergency First Responders and the public should a rail incident occur involving radiological rail transportation. Further, inclement weather could cause problems for inspectors at inspection points and delays or even cancellation of crew changes. The safety of the public and the need to ensure public confidence in this shipping program require that reasonable measures be taken to prevent rail incidents. Safety and public confidence can be bolstered through common sense precautions and, should an incident occur, a safe, swift, and effective response to any rail transportation incident involving radioactive materials.

TRANSCOM will be used to track radiological shipments to the Waste Isolation Pilot Plant (WIPP). Each rail car carrying radioactive material shall be equipped with a Transponder. Each train with rail car(s) carrying radioactive material shall be equipped with communications systems which will allow communication between the Engineer and carrier's dispatch centers at all times. States along the route will be able to use TRANSCOM to track the location of shipments as they pass through each State. These capabilities provide a unique opportunity for the States and the Department of Energy (DOE) to work together to reduce the risk that rail shipments may be involved in a transportation incident involving radioactive materials during adverse weather.

2. Track Conditions Assessment

By the end of the month of January of each year, the carrier(s) shall provide to DOE and the States information regarding rail problems, bad track conditions, and incidents along the radiological transportation route(s) from the previous year which were caused due to adverse weather conditions, including excess cold, heat or icing. The carrier(s) shall also provide DOE and the States information as to how the carrier(s) will prevent such problems or incidents with future radiological rail shipments and include a schedule of future rail inspections of the route.

3. Evaluation Criteria

Current weather conditions, the weather forecast, and track conditions must be acceptable prior to dispatch. The evaluation of weather conditions shall include the ability of train crews to reach crew change points safely, the ability of inspectors to reach inspection locations and the ability of emergency response personnel to respond in the event of an incident. Evaluation of track conditions shall include rock fall, wind, ice, snow, extreme temperatures, damage to track or road beds due to flash floods or river flooding and visibility.

The train must not be dispatched if weather is severe enough along the route to prevent an emergency response should there be an accident. A shipment should not be dispatched if the forecast predicts severe weather or bad track conditions which would affect the safety of the shipment when the shipment is anticipated to be in that area. Continued evaluation of weather and track conditions shall be made in approximately 200 mile increments as the shipment progresses.

Indication of weather conditions can be obtained from any of the following sources:

- The Weather Channel (monitored in the Central Monitoring Room)
- Output from the weather information software (KAVOURAS)
- Data Transmission Network (DTN)
- Contact with carrier representatives along the route
- State Contacts
- Waste Isolation Division (Westinghouse)

Severe weather conditions include the following storm warnings issued by the National Weather Service:

- Winter Storm Warning
- Heavy Snow Warning
- Blowing and Drifting Snow Warning
- Blizzard Warning
- Freezing Rain/Drizzle Advisory
- Sleet Warning
- Ice Storm Warning
- Wind Chill Warning
- Dense Fog Advisory
- Flash Flood Warning
- High Wind Warning
- Severe Thunderstorm Warning
- Tornado Warning
- Extreme Heat (temperature greater than 110 degrees F.)
- Extreme Cold (temperature less than 0 degrees F.)

A description of these terms is included in Appendix A.

As a minimum standard, the current weather conditions, the weather forecast, and current road conditions must be acceptable for a radiological train shipment to be considered acceptable for safe operation. If these conditions are not acceptable, the train must be delayed until travel conditions are acceptable.

Telephone numbers for information on road and travel conditions in each State are located in Appendix B.

States should monitor the status of WIPP rail shipments using the TRANSCOM system when adverse weather and road conditions exist. If a radiological rail shipment is listed on TRANSCOM with a departure time which would cause the radiological shipment to encounter adverse weather conditions, the States should notify the DOE WIPP Central Monitoring Room (CMR) of the need to consider delaying the departure of the shipment due to adverse weather conditions. The WIPP CMR telephone number is listed in Appendix C.

4. Dispatch Procedures

The decision to dispatch a shipment shall be made jointly by a representative of the generator site, carrier's operations director, and the CMR Operator, in consultation with the point of origin state's designated point of contact. The decision that acceptable conditions exist shall be documented. If the train fails its origin inspection, the train will not be dispatched and the shipper shall contact the CMR for further instructions.

If a state does not concur that the shipment should be dispatched, the WIPP Transportation Manager or designee shall consult with the state regarding the reasons the state recommends not dispatching the shipment.

State law enforcement contact numbers are found in Appendix D.

5. Adverse Conditions En Route

Should weather and/or rail conditions deteriorate, or other problems develop with the train while in route, the Senior Crew Member on the train shall locate and pull the train in to the nearest Safe Holding Area and notify the Carrier. The Carrier shall notify DOE, and the State involved.

If a shipment is diverted to a safe holding location due to bad weather or track conditions, the carrier shall hold the shipment at that location until notified to release the shipment from safe holding as discussed under "Safe and Secure Holding Locations."

Standard operating procedures should be followed to move the train into a Safe Holding Area or hold the radiological shipment in a Safe Holding Area when adverse conditions are encountered en route. These are described below. In addition, the States may wish to adopt supplemental procedures to assist DOE in avoiding adverse travel conditions.

Upon indication of severe weather or adverse road conditions from any source, the CMR Operator shall work through the carrier's Operations Center to notify and obtain input the Senior Crew Member (if original notification was not received from the train crew). The CMR Operator should also notify Transportation Integration of severe weather conditions as soon as possible.

The CMR Operator will obtain information from the shipper, carrier's dispatch or State law enforcement, as necessary, and coordinate diversion to a Safe Holding Area. The CMR, through the carrier's Operations Center, will notify the Senior Crew Member of the decision and obtain concurrence.

The Safe Holding Area should be selected based identified and agreed upon Safe Holding Areas and guidance on the selection of Safe Holding Areas. Train crews should be specifically instructed to make every reasonable effort to use selected Safe Holding Areas rather than just stopping the train or pulling into any rail siding.

Reasonable security, which may include a stationed law enforcement officer, a railroad police officer or law enforcement agent, must be provided on all parked trains still en route intersite or to WIPP. A train shall be considered parked when it remains idle and without movement for more than one (1) hour.

Road Closures

Road closures that would affect an emergency response, the safe evacuation of the public along the rail route, inability of inspectors to reach inspection points, or the inability of crews to make it to crew change points are criteria that require the train will be directed to locate the nearest Safe Holding Area.

Hazardous Conditions

In some instances, inclement weather could create hazardous conditions to the tracks, such as icing, heat buckling, flooding, etc. Rock slides, vehicle accidents, etc. are other hazardous conditions affecting tracks that must be taken into consideration. In such cases, the carrier will notify the WIPP CMR that the radiological shipment is diverting to the nearest Safe Holding Area. WIPP CMR should immediately notify the affected State.

Procedures for Release from Safe Holding Areas

Release from a Safe Holding Area will basically follow the same procedures used for Dispatch with the exception that verifying current rail inspections will not need to be done. Before release approval is granted, an assessment of current track conditions will be made if:

- The train went into a Safe Holding Area due to inclement weather and such conditions could have had a damaging affect on the track or track bed.
- The train went into a Safe Holding Area due to bad track or track bed conditions had initially been discovered.

- If the train is in a Safe Holding Area due to mechanical or equipment problems, a complete re-inspection of the train will be conducted prior to release.

Appendix A

National Weather Service

Terms Used in Advisories

(Conditions where travel should be avoided are marked with a **L** symbol.)

Watch

An NWS product indicating that a particular hazard is possible, i.e., that conditions are more favorable than usual for its occurrence. A watch is a recommendation for planning, preparation, and increased awareness (i.e., to be alert for changing weather, listen for further information, and think about what to do if the danger materializes).

L Warning

A product issued by NWS local offices indicating that a particular weather hazard is either imminent or has been reported. A warning indicates the need to take action to protect life and property. The type of hazard is reflected in the type of warning (e.g., tornado warning, blizzard warning).

Winter Conditions¹

Winter Storm Watch

Issued when conditions are favorable for the development of hazardous weather elements, such as heavy snow or sleet, blizzard conditions, significant accumulations of freezing rain or drizzle, or any combination thereof. Watches are usually issued 12 to 48 hours in advance of an event.

L Winter Storm Warning

Issued when hazardous winter weather conditions are imminent or very likely, including any occurrence or combination of heavy snow, wind-driven snow, sleet, and/or freezing rain/drizzle. Winter Storm Warnings are usually issued for up to a 12-hour duration, but can be extended out to 24 hours if the situation warrants. The term "near-blizzard" may be incorporated into the "winter storm warning" for serious situations which fall just short of official blizzard conditions.

L Heavy Snow Warning

Issued for snowfalls of 6 inches or more in 12 hours or less; or 8 inches or more in 24 hours or less (lesser amounts early or late in the season). Light winds (less than 10 mph) generally accompany these situations, with the primary hazard being heavy snow. Some mountainous regions have thresholds of 8 inches or more in 12 hours, or 10 or more inches in 24 hours. Some areas of the country have lower threshold values, such as 4

¹<http://submit.crh.noaa.gov> May 5, 2003

inches or more in 12 hours, or 6 inches in 24 hours, such as in southern Ohio, Kentucky, etc.

Blowing and Drifting Snow Advisory

Used when wind-driven snow intermittently reduces visibility to 1/4 mile or less. Travel may be hampered. Strong winds create blowing snow by picking up old or new snow.

LBlizzard Warning

Issued for winter storms with sustained winds or frequent gusts of 35 miles per hour or greater and considerable falling and/or blowing snow reducing visibility to less than 1/4 mile. These conditions are expected to last at least 3 hours.

LIce Storm Warning

Issued when damaging ice accumulations are expected during freezing rain situations; walking and driving becomes extremely dangerous. Ice accumulations are usually 1/4 inch or greater.

LSleet Warning

Issued when accumulations of sleet covering the ground to a depth of 1/2 inch or more are expected.

Freezing Rain/Drizzle Advisory

Generally used only during times when the intensity of freezing rain or drizzle is light and ice accumulations are less than 1/4 inch.

LWind Chill Warning

Issued when wind chill values of 50 below or lower from combined minimum wind speed of 10 mph and cold temperatures are occurring or expected.

Summer Conditions

L Dense Fog Advisory

Visibility Reduced to #1/4 mile over a widespread area

LFlash Flood Warning

Life-threatening flooding is imminent or occurring; it is either detected by weather radar, indicated by stream gauges, or reported by storm spotters. A **flash flood** is a flood that occurs very quickly; it is caused by heavy rainfall over a short period of time or from a dam break. A warning means to leave low-lying or flood prone areas.

LHigh Wind Warning

Hazardous winds are occurring or will soon occur across a significant area.

- For elevations below 7500 feet - sustained winds of 40 mph or greater or gusts to 58 mph or greater regardless of duration.
- In higher elevations - sustained winds of 50 mph or greater or gusts to at least 75 mph.
- Travel can be downright dangerous, especially for high profile vehicles like semi trucks, buses, and vans.

L Severe Thunderstorm Warning

A severe thunderstorm is imminent or occurring; it is either detected by weather radar or reported by storm spotters. A **severe thunderstorm** is one that produces winds 58 mph or stronger and/or hail 3/4 inch in diameter or larger. A warning means to take shelter.

L Tornado Warning

A tornado is imminent or occurring; it is either detected by weather radar or reported by storm spotters. A warning means to take shelter.

Winds²

Terms Related to Winds

Windy 20 – 30 mph, gusts to 40 mph
 Quite Windy or Very Windy 30 – 40 mph, gusts to 50 mph
 Dangerous Winds 40 – 50 mph, gusts to 58 mph

Wind Speeds in Miles Per Hour (MPH)

Wind Speed	Indications
25–31	Large branches in motion; whistling heard in telephone wires
32–38	Whole trees in motion; inconvenience felt walking against wind
39–54	Twigs break off; wind generally impedes progress
55–72	Damage to chimneys and TV antenna; pushes over shallow rooted trees
73–112	Peels surface off roofs; windows broken; light trailer houses pushed or overturned; moving automobiles pushed off roads
113–157	Roofs torn off houses; weak buildings and trailer homes destroyed; large trees snapped and uprooted
158 & up	Severe damage; cars lifted off ground

²Adapted from the Beaufort and Fujita Wind Scales

Appendix B
State Road and Travel Information Service

State	Telephone/Other
Arizona	602-651-2400 Ext. 7623
California	To Be Determined Before Shipments Begin
Colorado	303-512-5830 http://www.dot.state.co.us/public/public.htm
Idaho	Statewide: 208-336-6600 Pocatello area: 208-233-6724 Boise area: 208-376-8028 Regional Communications Center East 208-236-6066 (Alternate) Regional Communications Center West 208-846-7500
Nebraska	Statewide: 511 Outside Nebraska: 800-906-9069 http://doroads.nol.org/rca
Nevada	To Be Determined Before Shipments Begin
New Mexico	State Police District #1: 505-827-9300 Communications Center: 800-432-4269 (Weather & Road Construction)
Oregon	541-889-3999 or 503-588-2941 In State: 800-977-6368 www.odot.state.or.us (go to "roads")
Utah	801-964-6000 800-492-2400 www.dot.state.ut.us/public/travler_info.htm
Washington	509-575-2320 Ext. 0
Wyoming	Out of State: 307-772-0824 In State: 888-996-7623 http://wydotweb.state.wy.us/Docs/Roads/RoadTrav/RTImgae.html

Appendix C
U. S. Department of Energy (DOE)
Central Monitoring Room (CMR) Contact

DOE Contact	Telephone
WIPP Central Monitoring Room	505-234-8125 505-234-8457

Appendix D
State Contacts During A Shipment Delay

State	Contact	Telephone Number
Arizona	Department of Public Safety	602-223-2212
California	To be provided before shipment commences	
Colorado	Colorado State Patrol Regional Communications Center, Denver	303-239-4501
Idaho	Idaho State Police Regional Communications Center West	208-334-2900 208-846-7500
Nebraska	Nebraska State Patrol Regional Communications Center, Lincoln	402-471-4545 402-479-4950
Nevada	To be provided before shipment commences	
New Mexico	New Mexico State Police District 1 Communications Center	505-827-9300
Oregon	Oregon Emergency Management	503-378-6377
Utah	Weber Communications	801-965-4622
Washington	Washington State Patrol Yakima District Headquarters	509-249-6700
Wyoming	Wyoming Highway Patrol Dispatch Center	307-777-4321